6.1 PUBLIC INVOLVEMENT

As required under NEPA, opportunity must be provided for public involvement during the EIS process to identify pertinent issues and concerns with the Proposed Action. The initial public comment period involves a public scoping meeting and subsequent 30-day comment period.

The purpose of public scoping is to focus the analysis on significant issues and reasonable alternatives in order to eliminate extraneous discussion and to reduce the length of the EIS. Scoping is not a single, isolated action, but an ongoing process. The scoping process helps to: (1) involve the public and affected agencies early in the process, (2) objectively identify public issues and concerns about the Proposed Action, (3) gather additional information about the issues, and (4) identify a reasonable range of alternatives and potential impacts to be addressed.

The public scoping process for this EIS began August 15, 1994, with the publication of a Notice of Intent in the Federal Register. A news release was sent to all local papers and news media on August 18, 1994. A public scoping meeting was held by the BLM on September 8, 1994 at the Court House in Price, Utah. A total of 57 individuals signed the attendance sheet for the meeting. The public was encouraged to submit comments at the meeting or in writing to the BLM, Moab District. Verbal comments provided to the meeting were recorded and summarized on flip charts. Seventeen written comment letters were received by the BLM.

An internal agency scoping meeting attended by personnel from the BLM, U.S. Forest Service, Utah Division of Wildlife Resources and Carbon County was held on September 15, 1994. Written comments were also received from the BLM Resource Specialists from the Price River/San Rafael Resource Area. More detailed information regarding the public scoping process for this project, including copies of attendance sheets, a record of verbal comments, and copies of written comment letters and responses, is provided in the Public Scoping Summary Report (WCC 1995a).

6.2 CONSULTATION

The following list consists of government agencies, businesses, organizations, and individuals that were contacted or consulted during the scoping process and preparation of the DEIS and FEIS. Names that were inadvertently not included in the DEIS were added in this FEIS.

The BLM consulted with the State Historic Preservation Officer (SHPO), the President's Advisory Council on Historic Preservation (ACHP) and RGC to prepare a Programmatic Agreement for cultural resource inventories. The Programmatic Agreement will be completed as a legally binding document and will be referenced in the Record of Decision for the project.

Federal Offices

Advisory Council on Historic Preservation

Federal Energy Regulatory Commission

U.S. Fish & Wildlife Service, Utah Field Office
Bob Williams - Asst. Field Supervisor
Reed Harris - Field Supervisor
Ted Owens
Keith Rose
Marilet Zablan

U.S. Environmental Protection Agency
Mike Streiby
Robert Edgar
Shawn McCaffery

National Park Service
Eric Haig
John Notar
John Vimont

U.S. Forest Service
David Hatfield - Manti La Sal National Forest
Dennis Kelly - Manti La Sal National Forest
Clif Benoit - Ogden

State Offices

Natural Resource Conservation Service
Leland Sasser - Soil Scientist
George Cook - Range Conservationist

School and Institutional Trust Lands Administration
Jim Cooper

State Historic Preservation Officer

Utah State University - Cooperative Extension Service
Dennis Worwood - Emery Co. Extension Agent
Jack Soper - Carbon Co. Extension Agent

Utah Department of Community and Economic Development
Shirl Clarke - Administrator, Permanent Community Impact Fund

Utah Department of Employment Security
Larrus Hunting - Director, Price Office
Tom Jewell - Staff Person, Price Office

Utah Department of Natural Resources, Office of Energy and Resource Planning
Thomas Brill - Economist
Johan Bani - Economist
Jim Gallanus

Utah Division of Air Quality
Tim Blanchard
Mike Behesthi
Tom Orth
Jeff Shawn

Utah Division of Oil, Gas, and Mining
Darren Haddock
Frank Matthews - Petroleum Geologist
Gil Hunt - UIC Permit Program

Utah Division of State History
Evie Seelinger - Antiquities Section
Jim Dykman - Antiquities Section

Utah Division of Water Quality
Richard Denton
Harry Campbell

Utah Division of Water Rights
Mark Page - Regional Engineer
Casey Ford

Utah Division of Wildlife Resources
Bill Bates - Habitat Manager
Ben Morris - Habitat Biologist
Kevin Christopherson - Regional Fisheries Manager, Price
Karl Gramlich - Law Enforcement
Joel Peterson - Information Manager Utah Natural Heritage Program
Ted Owens
Harold Weaver - Desert Lake Waterfowl Management Area

Utah Geological Survey
David Tabet - Geologist

Utah Governor's Office of Planning and Budget
Peter Donner - Economist

Utah Power and Light
Ray Kirk - Environmental Engineer

Local Offices

Carbon County
David Levanger - County Building Inspector, County Planning Commission Staff
James Jensen - Carbon County School District - Superintendent (retired)
Randy Russell - Director, Carbon County Future
Val Bush - Carbon County School District - Superintendent
Neil Breinholt, Carbon County Commissioner
Bob Pero - County Clerk/Auditor
Dennis Dooley - Civil Defense and Special Projects
Jim Robertson - Carbon County Sheriffs Office - Sheriff
Lee Semken - Carbon County Roads Special Service District
Matt Wise - Carbon County Weed Control
Cindy Lou McDonald - Carbon County Planning and Building Department
Michelle Lea - Director Carbon County Future
Randy Russell - Former Director, Carbon County Future
Fred Halverson - Assessor
Howard Jennings - Engineer, County Road Department

Emery County
Bryant Anderson - Emery County Zoning and Planning
Ross Huntington - Emery County Auditor
J. Nielson - Emery County Weed Control
Jan Crawford - Emery County School District - Director Pupil Services

Price River Water Improvement District
Jeff Richins - Wastewater Treatment Plant Operator
Ken Snook - Potable Water Treatment Plant Operator
Phil Palmer

Southwest Utah Association of Local Governments
Deborah Hatt - Business Manager, C.D. B.G. Program Manager

Industry/Consultants

River Gas Corporation
Randy Allen - General Counsel
Michael Farrens - Executive Vice President, Development
Charles Willis - Project Engineer
Joey Stephenson - Landman
Terry Burns - Geologist
Steven Prince - Operations Manager
Billy Stacy - Vice President, Utah Operations

IntraSearch Inc.
Lundy C. Gammon - Manager, Photo Lab
Ray Platt

Bear West Consultants
Rulon Dutson
Ralph Becker

Avocet Consulting, Inc.
Jimmie Parrish - Principal

Intermountain Ecosystems, Inc.
Ron Kass

Caterpillar/Solar Turbines
Bob Johnson

NELCO Contractors, Inc.
Neil Branson
Larry Jensen

Anadarko Petroleum Corporation
Craig Walters

Franson, Noble and Associates
Richard Noble

Baseline Data, Inc.
Asa Nielson

Powers Elevation Co., Inc.
Gordon Tucker, Jr.

RMI Environmental Services, Inc.
Brad Simmons

Dust Chem
La Nila Shields

6.3 LIST OF PREPARERS

The Price CBM EIS was prepared by a third party contractor working under the direction of and in cooperation with the lead agency for the project, which is the BLM Price River/San Rafael Resource Area, and Moab District Office.

The following tables identify the core BLM (Table 6-1) and consultant (Table 6-2) interdisciplinary teams that were principally involved with preparing this Final EIS.

6.4 RESPONSE TO PUBLIC AND AGENCY COMMENTS

In October 1996, the BLM issued a Draft EIS for public and agency review. A Notice of Availability was published by the BLM in the Federal Register on October 4, 1996 initiating a 45-day comment period following the Federal Register publication of availability by the EPA on October 18, 1996. The comment period was to end on December 2, 1996, but was extended to January 3, 1997 at the request of some commentors. Two Public Hearings were held to collect comments on the Draft EIS on November 13, 1996 in Price and November 14, 1996 in Castle Dale. In Price, a total of 27 individuals provided comment and 18 individuals in Castle Dale. A total of 59 comment letters were received by the BLM. Table 6-3 lists all the letters received, and the names of individuals recorded at the Public Hearing. A copy of all the comment letters and Public Hearing transcripts follow Table 6-3. All comments, written and oral, were reviewed and considered in preparation of the Final EIS. Comments that clarified data, questioned facts or analyses, or raised issues bearing directly upon alternatives or environmental analyses are responded to in this Final EIS. Comments expressing personal opinions or statements were considered, but not necessarily responded to directly.

Within each letter, an index number was assigned in the right margin. For example, Letter FA-1 (Federal Agency Letter #1) from the EPA, was considered to contain 33 separate comments designated as FA-1.1 through FA-1.33. Responses to each comment follow the letters in Section 6.5.1.

6.4.1 Response to Individual Comments

Each comment is directly responded to, and, if appropriate, identifies the section of the text that has been revised as a result of the comment. The responses and indexed letters follow Chapter 6.0.

6.4.2 General Comments and Responses

The following general comments are synthesized from an analysis of the written and oral comments. They are comments on issues that were of concern to several of the commenters on the DEIS and are cross-

referenced in the individual comment responses.

Comment 1. *BLM's Preferred Alternative either exceeds its authority by requiring mitigating measures beyond those attached to the leases; or does not require sufficient mitigation to protect the environment.*

Response: BLM has developed and analyzed various alternatives to the RGC Proposed Action in order to evaluate a full range of potential environmental consequences and to identify measures that would mitigate the potential adverse impacts of the proposal within the terms of the RGC leases, the requirements of federal law and regulations, and the BLM land use plan under which the leases were issued.

BLM's new Preferred Alternative (Alternative D) is the minimum disturbance in critical wildlife corridors alternative. It represents a balance between protecting the environment and exceeding BLM's authority to control the development of the leases. The legal constraints on BLM's decision are explained in detail in Section 1.6.3.2 of the DEIS and FEIS. As explained in the legal constraints section, BLM's authority to implement alternatives or require mitigation measures that would deny RGC's "right and privilege to drill for, mine, extract, remove and dispose of all oil and gas deposits" in the leased lands is somewhat limited because mineral leases are in the nature of a contract between the Secretary of Interior and RGC. BLM's Preferred Alternative would place reasonable restrictions on RGC's proposed development of the CBM field in order to provide some protection for elk and mule deer on their winter ranges, as well as for other resources. BLM's selected alternative and the rationale supporting the BLM decision are included in the Record of Decision (ROD), along with conditions of approval for future APDs in the Project Area.

Several commenters also requested that BLM require RGC to finance a $4 million mitigation fund. BLM does not have the authority to require such a fund. However, RGC and BLM have reached an agreement under Alternative D for a Wildlife Mitigation Fund; RGC would contribute $1,250 per federal well in big game winter range to mitigate surface disturbance.

Comment 2. *BLM-required mitigation must be applied to development of all of RGC's leases regardless of ownership. BLM should develop an enforcement mechanism for the RGC-proposed environmental protection measures. (Refer to Section 2.2.5 for a* description *of the environmental protection measures.)*

Response: BLM cannot require mitigation on non-federal land. The environmental protection measures and mitigations included in the ROD would apply primarily to lands with federal surface ownership. On split-estate lands, Onshore Oil and Gas order No. 1 requires that RGC negotiate an agreement with the non-federal surface owner, regarding the protection of surface resources and reclamation of disturbed areas. BLM will normally not issue an APD without such an agreement. BLM may review the agreement to ensure that protection is adequate and may make recommendations, but cannot overrule a surface landowner's desires unless a federal resource would be adversely affected. For non-federal lands, UDOGM and the county governments would have the authority to require mitigations.

The RGC environmental protection measures, as described on page 2-20 of the DEIS, would be applied voluntarily on all lands regardless of ownership. These have been identified by RGC as standard operating procedures for its project, and as such have been considered as part of the

Proposed Action and alternatives in the environmental analysis. The DEIS does not specifically consider means of measuring or enforcing RGC's compliance with its commitments. If necessary, BLM could enforce the measures through incorporation in the ROD and/or APD. The ROD will identify the mitigation measures, monitoring and enforcement programs that have been selected by the BLM for the entire project on federal lands. Individual APDs may have additional stipulations. For other lands, compliance could be enforced through incorporation in surface use agreements, or by being attached as stipulations to UDOGM or county permits.

Comment 3. *The BLM must require a buffer zone to prevent drilling near structures and dwellings.*

Response: BLM Lease Category 3 - No Surface Occupancy has stipulations on federal leases restricting drilling from within incorporated cities (Appendix 1B of the DEIS). There are no other lease stipulations requiring a buffer zone from dwellings. BLM standard lease terms allow the BLM to relocate a well up to 656 feet (200 meters). The exact location of a well is reviewed and finalized at the APD stage. BLM cannot regulate drilling on private or state lands. Neither UDOGM, Carbon County or Emery County have established regulatory setbacks or buffer zones from CBM wells to residences. An informal survey of 7 state agencies/ commissions governing CBM development revealed that four of the states (New Mexico, Montana, Nevada and Texas) are similar to Utah and do not have regulations requiring a buffer zone. In Colorado, well drilling must be set back 200 feet from low density residential areas, or 350 feet or 1.5 times the rig height, whichever is greater, from high density areas. In California, a well located within 300 feet of an occupied dwelling must have a downhole safety valve. In Wyoming, the location of the pit is regulated. It must be at least 350 feet from a water supply, residence, school or place of public congregation. Most states indicated that the location of the well is negotiated between the company and the lease holder as a private contractual agreement. RGC has agreed in the past to certain procedures to reduce impacts to residential area, including.

- Having a trained safety specialist on site to monitor for H_2S and CO.
- Avoiding drilling between midnight and 6 AM unless unusual conditions force drilling after midnight to protect the well and equipment. If that were to occur, RGC would offer to pay for neighbors' lodging at nearby hotels.
- Using low-profile progressive cavitation pumps on some wells depending on reservoir characteristics and production, to minimize visual impacts.
- Enclosing the pumping unit in a building to reduce noise and restrict access where a traditional pump jack is needed.

Comment 4. *The potential for and effects of methane seepage must be analyzed, monitored and mitigated.*

Response: The issue of methane gas seepage was discussed on page 1-10, Section 1.6.2 of the DEIS. Additional information from UDOGM was incorporated into this section of the FEIS. As described in this section, the USGS, under the direction of UDOGM, is monitoring methane concentrations in soil gas

and shallow groundwater within the Project Area. The study area includes federal, state, and fee lands. The objective of the study is to determine the pre-development and early development methane concentrations in groundwater and soil gas in areas to be affected by development of CBM in the vicinity of Price, Utah (Naftz 1995). Data collected will be evaluated to determine if any seepage is occurring as a result of the CBM projects so that corrective action may be taken, if necessary (UDOGM 1997). As described in the DEIS, the results to date show median baseline concentrations in groundwater and soil gas samples were less than 0.005 mg/l. The maximum concentration in groundwater was 0.061 mg/l. The maximum concentration found in the Animas River Valley in Colorado and New Mexico was 39 mg/l (Naftz 1995). For comparison, dissolved methane concentrations as low as 1.1 mg/l could create an explosion hazard in poorly ventilated air spaces (Harder et al. 1965). A summary of the results to date is expected to be available to the public at the end of 1997. UDOGM and USGS intend to continue monitoring methane gas in the project vicinity for several years during field development (UDOGM 1997).

Comment 5. *A number of commenters said that the analysis of health and safety was not adequate because it did not include potential impacts to public safety from drilling and placement of structures near residential areas.*

Response: Public health and safety issues raised by various comments included well fires and explosion, vandalism, emergency services, RGC's safety record, methane gas seepage, earthquakes, physical hazards at unfenced facilities, and hydrogen sulfide releases. Most of these topics were addressed in the DEIS, but not in the Health and Safety section. The Health and Safety section has been rewritten to include information on these issues, or to refer to the sections of the FEIS where they are addressed. A summary of each topic is provided below:

I. Well fires and explosion. Information on blowouts and well fires was provided in the DEIS on page 1-12. A blowout would occur if a zone of unexpected high pressure were encountered during drilling and all pressure control measures failed. A well fire would occur if a blowout ignites. Blowouts are considered unlikely in the Price CBM Project Area because of the shallow well depths, low gas pressures, past experience in the area, and BLM and UDOGM requirements for use of blowout prevention equipment. The Health and Safety analysis (Section 4.16) has been modified in the FEIS to refer to the discussion of blowouts in Section 1.6.2.

II. Vandalism. Vandalism at wells has a small potential for causing a fire, but is highly unlikely to result in an explosion because of the low pressures. There have been a few incidents of vandalism, but none resulted in any type of emergency situation. Warning signs have now been placed at all the major facilities and some wells. RGC is continuing to put up warning signs at all the existing wells. All new facilities and wells will also have warning signs. Under some circumstances RGC would consider fencing a pumpjack or placing a building over it to provide increased security. RGC night shift personnel would perform some patrolling of the CBM field.

III. Emergency services. In the event of a well fire, RGC would call one of several service companies specializing in controlling well fires, not the county fire department. RGC to date has had no deaths or reportable

injuries on the job, as defined by OSHA. The construction contractor for the compressor station did have one death. RGC has an Emergency Plan that is in conformance with OSHA requirements. The Plan covers all potential emergencies including fires, employee injuries, chemical releases, hydrogen sulfide releases, and many others. The plan also includes phone numbers for all medical and emergency services, and a list of responsible personnel to contact in an emergency situation. The Plan is posted at all major facilities and is also kept in all employee vehicles. In addition, all employees are trained in emergency response when they are hired, and take refresher training once a year thereafter. Subcontractors working on the site are also trained and carry the Emergency Plan with them at all times. RGC has worked closely with local hospitals, fire departments, and emergency personnel to coordinate and prepare for any potential emergency.

IV. Methane gas seepage. This issue was discussed on page 1-10 of the DEIS. Methane seepage is considered unlikely due to casing and cementing of wells, and absence of coal at the Ferron sandstone outcrop. However, methane concentrations are being monitored by USGS and UDOGM (see General Comment and Response No. 4).

V. Earthquakes. This issue was discussed on page 1-11 of the DEIS (as Seismic Activity). The potential for earthquake and seismic damage to well field facilities is minimal. Refer also to response to Comment I-18.2.

VI. Physical hazards at unfenced facilities. Information on this topic has been added to Section 4.16 of the FEIS. All compressor stations, injection wells, and evaporation ponds will be fenced. Well pads and pump jacks will not normally be fenced, but pump jacks do have a guard railing around them to prevent large animals and people from being injured by moving parts. Pump jacks would be fenced or be enclosed in a building under some circumstances. There has been one incident in the Price CBM field where eight lambs were killed by a pumpjack when they went through the guard railing to get in the shade. RGC installed sheep fencing at this and nearby wells to prevent further losses. Experience from the Uinta Basin oil and gas fields has shown minimal impacts on livestock. The range conservationist in the BLM Vernal District said that, to his knowledge, no livestock have been killed by pumps (Tolman 1997). RGC has enclosed one pump jack in a building at the request of Carbon County.

VII. Hydrogen sulfide (H_2S) releases. This was discussed on page 1-12 of the DEIS. RGC has drilled approximately 100 CBM wells without encountering H_2S, and it is highly unlikely that H_2S would be encountered while drilling any CBM well in the area. H_2S may be encountered at injection wells. RGC did encounter H_2S while re-entering a much deeper well previously drilled by Texaco. RGC converted this well into an injection well, and has H_2S monitoring equipment on the well and control valves to shut the well if H_2S appears. Employees are trained to deal with an encounter of H_2S and emergency equipment (e.g., self-contained breathing apparatus) is kept on site. No H_2S has appeared during operation of the well.

Comment 6. *The BLM must stop the project and must gather additional baseline information on wildlife, cultural resources, air quality, water resources, residential issues and vegetation before an adequate EIS can be prepared. The information is inadequate for BLM to make a decision.*

Response: The CEQ regulations (40 CFR 1502.14 and 15) require that an EIS should succinctly describe the affected environment and significant environmental impacts to allow for a reasonable comparative assessment of alternatives. It is not necessary to do an exhaustive research study of the affected environment and all potential impacts. The data and analysis should be commensurate with the importance of the impact. Based on the guidance in 40 CFR 1502.22, the BLM considers that the information and analyses presented in the DEIS and FEIS are based on credible scientific evidence and are adequate for the decision maker to make a reasoned choice among alternatives.

Comment 7. *Many commenters expressed concern that the BLM bonding requirement of $25,000 is much smaller than the potential costs of reclamation, and is sufficient to repair potential damage from the project. They expressed concern that RGC should be bonded for 4 to 10 million dollars or the counties and citizens may be required to pay for reclamation of the study area. Two commenters said that the DEIS overstated the plugging and reclamation costs and failed to consider that the value of salvageable equipment would offset some of the reclamation liability.*

Response: Bonding was discussed on page 1--9 of the DEIS. This section has been rewritten in the FEIS to provide a clearer understanding of the issue. The existing BLM statewide bond of $25,000 is currently adequate, for the reasons provided below, and may be increased at later stages of the project if the risk of default increases. Several other types of bonds also apply to the project.

Bonding for oil and gas is a risk management tool used by the BLM. It is not designed to cover 100 percent of the reclamation costs and royalty income, as in some other federally administered activities such as coal operations. The historical rate of default is very low. As of November, 1994, only 156 wells had been orphaned, out of 104,209 nationwide on federal and Indian mineral estate (BLM Bonding/Unfunded Liability Review of the Oil and Gas Program, March 27, 1995). This is a forfeiture rate of only 0.15 percent. Historically, the BLM has not seen oil and gas operators walk away from their responsibilities, and therefore has not had a need for large up-front bonds. The report did suggest a moderate increase in statewide bonds to $75,000. To date this change has not occurred.

Bonding requirements will increase as the risk increases, and the BLM will monitor the operations to determine when the liability is increasing. The risks are different in different stages of an oil and gas development project. Start-up costs are high in the very early stages of development. Once the break-even point is reached, there will be a positive cash flow and it is highly unlikely an operator would forsake a profitable venture. The risk increases at the end of production. The BLM will monitor for several telltale signs of concern: decrease in cash flow to a point prompting a sale to another oil and gas company with a smaller profit margin, unresponsiveness by the operator to non-compliance issues, unpaid royalties, unreclaimed activities, or other negative cash flow activities. At that time, the BLM would increase the bond amount to address the

increasing liability. For the Price CBM project, that time is probably ten to 15 years away. The bond could be increased to 100% of the remaining plugging and reclamation costs, or even higher, if needed.

If RGC or its successor did default, county or other local governments will not have any liability. The order of liability rests initially on the bonded entity and ultimately with the lessee of record title. In this case, because many leases are held by RGC, this is the same entity. Should both parties fail to respond, then the responsibility falls on the landowner. For BLM administered leases, this would be the Federal Government. For a county, or any other governmental agency to be burdened with the financial liability for any plugging and abandonment activities, the Federal Government would first have to default.

The salvage value of surface equipment is not considered by BLM when establishing bonding requirements. BLM would be able to salvage surface equipment and use it to offset abandonment costs only if the lease was terminated. In addition, salvage values are unknown at this point, and may be minor or negligible after 20 years of operation. The estimated liability of $15,000 per well and associated roads considers not only plugging and recontouring, but also revegetation. Revegetation practices applicable to the project are described in Section 2.2.5.2, and include surface preparation, erosion control, and seeding. Mulching, fertilizing, and handplanting of shrub seedlings in cages may be required and were included in the cost estimates.

In addition to the BLM statewide bond for wells on federal land, RGC currently also has a $5,000 bond in place for a single pipeline right-of -way on BLM land, an $80,000 bond with UDOGM for wells on private land, and a $200,000 bond with SITLA for wells on state trust land.

Comment 8. *Various commenters questioned the effectiveness of reclamation in the Project Area, or stated that the reclaimed areas would provide better forage than the original vegetation. Several commenters requested that BLM establish and use reclamation standards to assess the success of revegetation efforts.*

Response: Revegetation is analyzed in Sections 3.5.4 and 4.5.2 of the DEIS. There are significant limitations to consider in reestablishing vegetation in the Project Area, including low rainfall and poor soils. However, revegetation research has been conducted in this and similar areas, for example Ferguson and Frischknecht's (1985) revegetation studies in the Emery and Alton coal fields, and appropriate revegetation methods and species have been established. The DEIS included specifications for reclamation on federal lands (Section 2.2.5.2), as well as lists of species and seed rates that would be applied in various habitats on federal land (Appendix 2F). In addition, RGC would be required to provide a site-specific reclamation plan as part of its surface use plan of operations for each APD.

The BLM Price River Resource Area has not developed quantitative standards for evaluating revegetation success, but has an established process for making evaluations. BLM would inspect revegetated areas during initial revegetation efforts (to make sure that recontouring and erosion control were adequate), and again after two growing seasons. Success would be evaluated after two growing seasons by visually comparing density of vegetation to density in adjacent undisturbed areas. Density would be used rather than cover

because the newly established vegetation would be small and not yet have reached full cover. If poor establishment is observed for seeded species, BLM would require that the area be retreated. Similarly, if noxious weed infestations are observed, BLM would require that weed controls be used.

For non-federal lands, RGC has committed to reclaiming all disturbed areas using seed mixtures requested by landowners, and has performed revegetation on all of its developments to date. UDOGM requires that reclamation meet the requirements established in surface use agreements with landowners, or minimum standards established by UDOGM in the absence of a surface use agreement (Hill 1997). Success is evaluated on a case-by-case basis. If landowners are unhappy with the results and disagree with UDOGM's assessment, they can appeal to the Board which will then review the case.

Comment 9. *RGC should be required to monitor its effects on groundwater quality and on the flows of adjacent wells and springs.*

Response: Produced water would be disposed of in a Class II injection well in accordance with a UIC permit issued by UDOGM and the BLM Onshore Oil and Gas Order No. 7, Disposal of Ground Water. UDOGM requires testing and monitoring of injection wells to prevent pollution or damage to groundwater resources under the Oil and Gas Conservation General Rules, R649-5-5. Injection parameters that are evaluated or monitored include the injection rate, pressure and depth interval, and the volume and quality of the water to be injected. The injection well and casing are also pressure tested to monitor physical and mechanical integrity. Installing groundwater monitoring wells into the injection stratum is not recommended or warranted by UDOGM or the BLM. As stated in UDOGM's comments on the DEIS (Comments SG-1.67 and 68), the Navajo Sandstone exhibits most of the characteristics of an ideal disposal zone. As each new disposal well is drilled, tested and operated, additional data become available to UDOGM to evaluate the performance and future of disposal into these formations. To date, UDOGM has not seen any information that "reflects negatively on the use of the current and possible disposal zones". UDOGM would continue to monitor the data to ensure that groundwater resources are not jeopardized.

As discussed in responses to Comments I-15.3 and 15.4, it is highly unlikely that any surface springs in the Project Area or to the east of the Project Area would be affected by the CBM operation. By state law (Title 73-5-4), it is the responsibility of the water right owner to monitor the quality and quantity of the water. Neither BLM or Utah Division of Water Rights would require monitoring of springs or wells. Section 1.6.2 was revised to clarify this issue.

Comment 10. *The potential for treatment of produced water through reverse osmosis (RO) so that it can be used beneficially should be further analyzed.*

Response: The purpose of the Proposed Action is to produce CBM gas. A by-product of CBM production is the generation of large volumes of wastewater. Regardless of the volume of produced water, RGC is required to properly dispose of the water produced from federal leases in accordance with Onshore Oil and Gas Order No. 7. The BLM has no authority regarding produced water from state or private wells. As stated in the DEIS, page 1-21, deep well injection is the preferred disposal method. The BLM cannot require RGC to treat

the produced water through reverse osmosis (RO). The potential use of RO was discussed in the DEIS on page 1-22, along with other disposal and treatment alternatives. The discussion on disposal options for produced water was based on data and articles obtained from the Gas Research Institute (GRI), Society of Petroleum Engineers, Rocky Mountain Association of Geologists, RO vendors, Anadarko Petroleum Corporation, as well as RGC. The disposal costs, from all the sources, ranged from $0.094 to 0.75 for deep well injection, and $0.18 to 1.43 for RO. RO treatment was dismissed as the preferred disposal method because RO is currently more expensive and less reliable than injection. The primary advantage of RO treatment is the end product that is good quality water suitable for beneficial use. Some of the disadvantages of RO include constant maintenance and monitoring to operate properly; pretreatment requirements of the water, experienced labor requirements, limited operating history with produced water from CBM operations, and the need for a secondary disposal method to dispose of the concentrated brine. The economic benefits of RO also decline over time as the volume of produced water declines as gas is produced.

Subsurface injection typically "represents the simplest, most cost-effective disposal method and therefore, remains the most widely used by onshore producers. Once an injection well is permitted, drilled, successfully completed and operational, it can often require the least attention and maintenance, and consequently, may have a lower operation cost than the other alternatives" (Simmons 1996). However, the success of injection depends on drilling into a favorable formation that meets the proper geologic characteristics to prevent contamination or co-mingling with other formations. Anadarko is currently using RO as the primary disposal method at the Castlegate CBM project because they have not been able to locate an acceptable injection zone that does not co-mingle with the production zone. The treated effluent from the RO plants is discharged to a surface stream and the brine is hauled off site to a commercial disposal well. The approximate disposal cost for Anadarko's RO plants is $0.75/bbl (Walters 1997). As stated in the DEIS, Anadarko does not consider RO as their preferred treatment method nor is it considered cost-effective as a long-term disposal option.

Several of the commenters have obtained information from RO vendors comparing the benefits and costs of RO with other treatment methods. However, the EIS does not preclude Carbon County, Emery County, or other entity from applying to the State of Utah for rights to the produced water for beneficial use. However, neither the BLM nor UDOGM can require RGC to treat the produced water through RO. RGC has agreed to work with the Counties to provide the produced water for community use should the Counties decide to pursue a treatment method. As stated in the DEIS on page 1-13, Carbon and Emery Counties have not applied for water rights or approached RGC or the BLM with a proposal for use of the potential water source. Therefore, the treatment and potential use of the produced water is not further analyzed in the DEIS.

Comment 11. *The alternatives of phased development and horizontal drilling would reduce many impacts and should be analyzed in the FEIS.*

Response: The alternatives of phased development and horizontal drilling were

analyzed in the DEIS; refer to pages 1-18 and 1-19 for details. In brief, phased development was not considered a feasible alternative due to (1) limitations by the drainage characteristics of the field that would likely reduce the rate and amount of gas recovery, (2) increased infrastructure requirements, and (3) lease constraints. Directional or horizontal drilling is not considered a feasible alternative because of technical problems associated with dewatering the coal seams and accessing the multiple coal seams by drilling numerous lateral legs. Horizontal wells also require (1) larger drill rigs, drill pads and reserve pits; (2) more time to drill, and (3) must be drilled with mud rather than air. In addition, BLM does not have the authority to dictate the method of drilling.

Comment 12. *Some commenters said that BLM has full control over well spacing and should eliminate the alternatives for 80-acre spacing. Other comments indicated that BLM has no control over 80-acre well spacing, so that selecting a 160-acre alternative is therefore meaningless.*

Response: BLM has turned over authority for spacing to UDOGM, but retains responsibility for permitting wells on federal land. Implementation of 80-acre spacing cannot be done unilaterally by UDOGM without the cooperation of BLM.

Use of 80-acre spacing on a large scale appears unlikely, but is considered in the EIS in order to represent the maximum development that could occur within a range of alternatives. In UDOGM's comments on the DEIS, they state "Development of the Drunkards Wash area has occurred on a 160 acre spacing pattern...We have no information or reason at this time to lead us to believe that any reduced spacing is or ever will be appropriate....Even if a reduced spacing was found to be appropriate in the future, chances are it would only apply to a smaller portion(s) of the project area and not be applicable to the entire area."

If the ROD selects an alternative with 160-acre spacing and UDOGM later decided that 80-acre spacing would be more effective at extracting the gas resources, implementation of the 80-acre spacing on federal lands would be subject to NEPA compliance requirements by BLM. Each individual well would be evaluated with an Environmental Assessment at the APD stage. Use of 80-acre spacing for more than a few wells would be a significant action, and would likely trigger a supplemental EIS, with full opportunity for public review and participation.

Comment 13. *A number of commenters said that BLM must not allow oil or gas development in the Gordon Creek Wildlife Management Area. Several other commenters requested modifications to the preferred alternative that would be more protective of wildlife and/or would locate habitat protection areas in areas of low gas production potential.*

Response: BLM, in consultation with UDWR, UDOGM and RGC, has developed a new alternative that eliminates 56 wells and other facilities within the Gordon Creek Wildlife Management Area. Alternative D, Big Game Minimum Disturbance Corridors, is evaluated in the FEIS, and is the BLM preferred alternative. Refer to Section 2.6 for a description of Alternative D.

Comment 14. *Several comments indicated that analysis of impacts to residential areas and residents was inadequate because it did not quantify the numbers of residences or families that would be affected.*

Response: An analysis of the number of residences that would be affected by each alternative has been added to the FEIS. Information on the number of residences within 500 feet, one-quarter mile, and one-half mile of wells is provided in Table 4.10-2, summarized by township, range and section. The 160-acre alternatives (Proposed Action, B1, C1 and D) would have 59 residences within 500 feet, 273 within one-quarter mile, and 505 within one-half mile. This information has been incorporated into revised Chapter 4 analyses of land use, visual, noise, noise, and socioeconomics impacts.

Comment 15. *Several commenters were concerned that the DEIS did not include any mitigations for recreation impacts, and some provided suggested mitigations.*

Response: Most specific comments on recreation mitigation dealt with the Carbon County Fairgrounds, the Carbon County Rifle Range and impacts to trails and the Carbon County Trails Plan. These specific issues and recommended mitigations are discussed in individual response to comments. The fairground issue is discussed in response LG-1.28; the rifle range issue is discussed in response LG-1.29; and the trails mitigation issue is discussed in response NGO-6.2.

Comment 16. *BLM has presented no scientific support for designation of the security areas. They are too small, isolated and fragmented to be effective.*

Response: Information about the security areas was provided on page 2-40 (Section 2.5, introduction to Security Areas Protection Alternative), and on page 3-23 (Section 3.7.2, introduction to Big Game). These are traditional areas of concentrated winter use. Protection of these areas would provide areas free from human activity during the winter season, and would provide suitable areas for habitat enhancement projects.

BLM has interagency study data (transects read each spring) from some of the security areas, but not all of them. The results of these transects were extrapolated to similar sites, and used along with topography, access and the professional local experience and judgment of the BLM and UDWR wildlife biologists.

The effective area of the security areas is larger than suggested by the boundaries shown on Plates 7 and 8. The boundaries of the security areas were developed to take advantage of topography, streams, and other environmental stipulations:

I. Several areas are separated by corridors along streams, or are bordered by stream corridors. Since Environmental Protection Measure BLM 4 provides for no surface occupancy within 330 feet of perennial streams, these stream corridors form part of the effective area of the security areas. With the stream corridors considered, the security areas at Telephone Bench and Horse Bench, separated by Bob Wright Canyon, form a single area of about four square miles in elk winter range. Similarly, security areas separated by the north and south forks of Gordon Creek unite to form a single area of about six square miles within elk critical winter range.

II. Five areas are adjacent to the edges of the Project Area and the nearby Book Cliffs and edges of the Wasatch Plateau. Therefore, at least one side of each of these security areas is contiguous with undisturbed habitat.

III. A number of the smaller areas are bordered by cliffs and steep terrain. They include the two security areas on Pinnacle Bench, the area on the east end of Porphyry Bench, the area north of the main stem of Gordon Creek, and portions of the three areas in the southwest. Drilling of wells would not be allowed on steep slopes, extending the effective boundary of the security area. In addition, the topographic break of 150 to 400 vertical feet would reduce the potential for disturbance and displacement of wildlife. The analysis of indirect impacts did not consider terrain, and therefore may have overstated impacts with the Security Areas Protection Alternatives.

IV. Thirteen areas are in or adjacent to winter closure areas. Traffic and human activity would be restricted during the winter months, and these areas would function together as wintering habitat. The wells and roads without human presence would have little disturbance effect on big game. The security area and adjacent winter closure area would cover most of the northwest quarter of the Project Area.

BLM believes that the security areas, combined with winter closure, would retain the values of critical winter range.

	Water Use (ac-ft/yr)		
	Municipal	Industrial[3]	Agricultural
Carbon County[1]	5,250	2,340	68,656
Emery County[2]	1,101	8,202	118,241

Notes:

1. Source: 1995 Price River Water Commissioners' Reports
2. Source: Huntington Creek and Cottonwood Creek Water Commissioners' Reports

Comment 17. *Impacts of PRWID water use must be assessed relative to potential loss of agricultural land and wetlands.*

Response: The DEIS estimated the annual consumption of fresh water based on RGC's actual use in 1995. Table 2.2.-7 presents the estimated water needs by alternative. For the Proposed Action and the preferred alternative (Alternative D), the water consumed for the project construction activities would be approximately 49 and 45 ac-ft/yr, respectively. As shown in Table 2.2-7, this assumes a one-time, post-construction application of magnesium chloride. For roads with heavy traffic volume, an annual application rate may be necessary to control dust. RGC estimates 800 barrels per road mile (0.1 ac-ft/mi) of water would be needed for magnesium chloride application. Based on a conservative assumption that all the roads would need an annual magnesium chloride application, there would be up to approximately 3 ac-ft/yr additional water consumed. Fresh water needs for operating activities are considered insignificant. The following table compares these consumptive uses with the community uses:

3. Report has been modified to reflect actual use.

Figures 3.2-1a and b in the DEIS illustrate this comparison in a pie chart. RGC is currently and would be purchasing or leasing water

through agreement with PRWID, NELCO Contractors and other individual owners. Water obtained from PRWID is either culinary water or irrigation water withdrawn from the Carbon Canal. Water purchased from PRWID would not jeopardize the water available for existing municipal and industrial uses. The source of water for the proposed activities would vary over the life of the project depending on available water rights.

If one assumes that the 4952 ac-ft/yr would be taken from water formerly allocated for agricultural uses, the CBM project needs would represent approximately 0.07 percent of the water consumed for agricultural uses by Carbon County (68,656 ac-ft/yr). There are
A similar approach could be applied to the potential loss of wetlands due to the change in return flow volumes. Approximately 3.6 acres of the 5,209 acres of riparian and wetland vegetation in the Project Area would potentially be adversely affected by water depletion.

approximately 15,478 acres of agricultural land in the Project Area (Table 3.5-1 of the DEIS and FEIS). Assuming a similar percentage of agriculture lands would be affected by the loss of available water consumed by the CBM development, approximately 11 acres of agricultural land would potentially be taken out of production. The Division of Water Rights allows the diversion of 4 ac-ft of water for every irrigated acre. If 49 ac-ft were diverted for industrial use instead of agricultural use, approximately 12 acres of irrigated land could be affected. (This analysis is conservative (i.e., over-estimates impacts) by not taking into account irrigation efficiency and return flow.)

TABLE 6-1
PRICE COALBED METHANE PROJECT
LIST OF BLM INTERDISCIPLINARY TEAM EIS PREPARERS

Name	Responsibility
BUREAU OF LAND MANAGEMENT	
Utah State Office	
Boyd Christensen	Water Resources
George Diwachak	Mineral Resources
Allen McKee	Mineral Resources
Garth Portillo	Cultural Resources
Greg Thayn	Environmental Coordinator
Jeff Williams	Socioeconomics
Moab District	
Ann Marie Aubry	Geology/Mineral Resources
Bob Dalla	Mineral Resources
Jim Harte	Water Resources
Eric Jones	Geology/Mineral Resources
Kate Kitchell	Moab District Manager
Bill Stringer	Associate District Manager
Daryl Trotter	Planning and Environmental Coordinator
Price River/San Rafael Resource Area	
Mark Bailey	Area Co-Manager
Penny Dunn	Area Co-Manager
Kerry Flood	Water Resources
Karl Ivory	Range Conservation
Ray Jenson	Range Conservation
Mark Mackiewicz	Soils
Blaine Miller	Cultural Resources
David Mills	Wildlife Resources
Dean Nyffeler	Geology
Tom Rasmussen	Paleontology
Don Stephens	Oil and Gas
Dennis Willis	Recreation, Visual Resources

TABLE 6-2
PRICE COALBED METHANE PROJECT
LIST OF CONSULTANT INTERDISCIPLINARY TEAM EIS PREPARERS

Name	Affiliation	Education	Responsibility
Karen Baud	Woodward-Clyde	M.A., Biology	Biological Resources, Document Coordinator
Ron Beane	MDG, Inc.	M.A., Biology	Wildlife, Special Status Species
Richard Bell	Woodward-Clyde	B.S., Biology, Geology, Chemistry	Project Management, Soils, Health and Safety
Susan Chandler	Alpine Archaeological	M.A., Anthropology, Archaeology	Cultural Resources
Paula Daukas	Woodward-Clyde	M.S., Water Resources Management	Project Management, Water Resources
Jeffrey Dawson	Woodward-Clyde	M.S., Botany	Vegetation, Wetlands, Wildlife, Special Status Species
Jeffery Ehrenzeller	Woodward-Clyde	M.A., Geology	Geology, Water Resources
Chris Freeman	Woodward-Clyde	B.S., Environmental Policy Analysis and Planning	Socioeconomics/Quality of Life, Transportation
David Gaige	Woodward-Clyde	M.S., Environmental Engineering	Air Quality, Noise
David Jones	Woodward-Clyde	B.S., General Agriculture, Landscape Horticulture	Livestock Management, Recreation
Christine Keller	View Point West	M.A., Geography	Land Use, Visual Resources
Chris Paulsen	Woodward-Clyde	B.S., Forestry Management	Soils
Chris Williams	Woodward-Clyde	M.S., Earth Resources	Soils

TABLE 6-3

COMMENTS ON THE DRAFT EIS

Letter Index Number	Comments Received From
FEDERAL AGENCIES	
FA-1	U.S. Environmental Protection Agency, Region VIII
FA-2	U.S. Forest Service, Manti-LaSal National Forest
FA-3	U.S. Fish and Wildlife Service, Utah Field Office
UTAH STATE GOVERNMENT AND AGENCIES	
SG-l	Governor's Office of Planning and Budget
LOCAL GOVERNMENT AND AGENCIES	
LG-l	Carbon County Commission
LG-2	Castle Valley Special Service District
LG-3	Emery County Public Lands Council
NON-GOVERNMENT ORGANIZATION	
NGO-1	Utah Wildlife Federation
NGO-2	Sportsmen For Fish and Wildlife
NGO-3	Utah Trappers Association
NGO-4	Land and Water Fund
NGO-5	Slickrock Outdoor Society of Price
NGO-6	Carbon County Trails Advisory Board
NGO-7	Carbon County Travel Bureau
NGO-8	Utah Petroleum Association
NGO-9	Rocky Mountain Oil & Gas Association
PRIVATE COMPANIES AND UNIVERSITIES	
PCU-l	Brigham Young University
PCU-2	Benco Oil Services, Inc.
PCU-3	River Gas Corporation
PCU-4	Texaco Exploration and Production, Inc.
PCU-5	Anadarko Petroleum Corporation
PCU-6	Chandler & Associates, Inc.
PCU-7	Heitzrnan Drill-Site Services
PCU-8	Baseline Data Inc.
PCU-9	Lowdermilk Rock Products of Utah, Inc.
PCU-10	Dolar Oil Properties

INDIVIDUALS

1-1	Mike Hubbard
I-2	Paul Moynier
I-3	Gene Spigarelli
1-4	Charles and Phyllis Bradshaw
1-5	William E. Love
I-6	William E. Love
1-7	Robin Potochnick
I-8	Dale L. Harber
1-9	Paul and Lynne Sheya
1-10	Jim Karpowitz
1-11	Carter and Georgene Reed
1-12	Malcolm and Pamela Swanson
I-13	Byron J. Jones
1-14	Ben Grimes
1-15	Liane L. Mattson
1-16	Lynna Topolovec
1-17	Louie P. Tonc
1-18	Louie Tonc Sr.
1-19	Mark Tonc
1-20	Steven L. Rauzi
1-21	Pat Wilson
1-22	Mark C. Oveson M.D.
1-23	Robert Underwood
1-24	Gary L. DeRose
1-25	David Burrows
I-26	Ray Shepherd
1-27	Kurt McFarlane
1-28	W. Richard Turner
I-29	S. Craig Bonham
1-30	Pete Kilboume
1-31	Robert Zender
1-32	Form Letter, 89 Signatures
1-33	Form Letter, 8 Signatures

PUBLIC HEARING TRANSCRIPTS

PRICE, UTAH NOVEMBER 13, 1996

PHP-1-6	Lynna Topolovec, Self and Carbon County Zoning

PHP-7-9	Andrew King
PHP-10	Mike Strieby, U.S. Environmental Protection Agency
PHP-11-17	Jim Karpowitz
PHP-18	John Tomaddkis
PHP-19	Lamond Williams
PHP-20, 21	Jim Peacock, Utah Petroleum Association
PHP-22-25	Glen McKey
PHP-26	Dru Bower, People for the West
PHP-27, 28	Steve Christensen, Carbon County Recreation
PHP-29	Larry Jensen
PHP-30-33	Claire Moseley, Rocky Mountain Oil & Gas Association
PHP-34, 35	Duane Frandsen
PHP-36-40	Paul Sheya
PHP-41	Neil Frandsen
PHP-42, 43	Wayne Urie, Utah Farm Bureau Federation
PHP-44	Brent Barker
PHP-45	Glendon Simper
PHP-46, 47	Verdis Barker
PHP-48	Darrell Barker
PHP-49-52	Bill Love
PHP-53	Asa Nielson, Baseline Data Inc.
PHP-54	Don Peay, Sportsman Fish and Wildlife
PHP-55, 56	Bill Bates, City Council
PHP-57	Gene Spigarelli
PHP-58-60	Nancy Karpowitz
PHP-61, 62	Bill Krompel, Carbon County Commission

Letter Index Number	Comments Received From
CASTLE DALE, UTAH NOVEMBER 14,1996	
PHCD-1-3	Bill Karcich
PHCD-4-7	Larry Jensen
PHCP-8, 9	Samuel Fletcher
PHCP-10, 11	Mack Huntington, Emery County Commission
PHCP-12, 13	Aaron Gibson, PacifiCorp
PHCP-14-18	Asa Nielson, Baseline Data Inc.
PHCP-19-21	Andrew King
PHCP-22, 23	Robert Zender
PHCP-24-27	Jeff Defreest
PHCP-28	Tracy Jeffs, Emery County
PHCP-29-32	James Gilson, Sportsman for Quality Wildlife Association
PHCP-33	Unknown male
PHCP-34-36	Jim Beason
PHCP-37	Jim Ward
PHCP-38, 39	Boyd Griffin
PHCP-40, 41	Mark Dolar
PHCP-42-46	Jim Peacock, Utah Petroleum Association
PHCP-47	Dave Moore
PHCP-48-52	Daryl Master
PHCP-53	Unknown male